

REC'D 21 MAR 2005

WIPO

PCT

REC'D 21 MAR 2005

WIPO

PC

PA 1278876

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

February 02, 2005

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 60/541,080

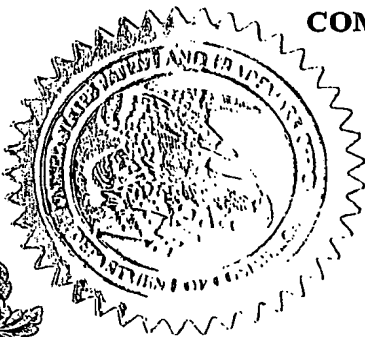
FILING DATE: February 02, 2004

IB/05/50601

## PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH RULE 17.1(a) OR (b)

By Authority of the  
COMMISSIONER OF PATENTS AND TRADEMARKS



P. SWAIN

Certifying Officer

14230 U.S. PTO

Please type a plus sign (+) inside this box → 

PTO/SB/16 (02-01)  
Approved for use through 10/31/2002. OMB 0651-0032  
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PROVISIONAL APPLICATION FOR PATENT COVER SHEET**

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label N EV 312 068 343

Date of Deposit: February 2, 2004

INVENTOR(S)					
Given Name (first and middle [if any])		Family Name or Surname		Residence (City and either State or Foreign Country)	
JAVIER SAI SHANKAR		DEL PRADO NANDAGOPALAN		OSSINING, NEW YORK TARRYTOWN, NEW YORK	
<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (280 characters max)					
ENHANCED NAV MECHANISM FOR OPTIMAL REUSE OF THE SPECTRUM					
CORRESPONDENCE ADDRESS					
Direct all correspondence to:					
<input checked="" type="checkbox"/> Customer Number		24737		<div style="border: 1px solid black; padding: 10px; text-align: center; font-size: 24px;">24737</div>	
OR Type Customer Number here					
<input type="checkbox"/> Firm or Individual Name		PHILIPS INTELLECTUAL PROPERTY & STANDARDS			
Address		P.O. BOX 3001			
Address		345 SCARBOROUGH ROAD			
City		BRIARCLIFF MANOR	State	NEW YORK	ZIP 10510-8001
Country		USA	Telephone	(914) 333-9608	Fax (914) 332-0615
ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		4		<input type="checkbox"/> CD(s), Number _____	
<input type="checkbox"/> Drawing(s) Number of Sheets		_____		<input type="checkbox"/> Other (specify) _____	
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.					
<input type="checkbox"/> A check or money order is enclosed to cover the filing fees					
<input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:				14-1270	FILING FEE AMOUNT (\$) 160.00
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

Respectfully submitted,

SIGNATURE

Date FEBRUARY 2, 2004

TYPED or PRINTED NAME

Aaron Waxler

REGISTRATION NO.: 48,027

(if appropriate)

Docket Number: US040107

TELEPHONE

(914) 333-9608

**USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT**

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Box 1450, Alexandria, VA 22313-1450

## Philips Intellectual Property & Standards

### Invention Disclosure

Version 1.4.0 14-11-2002

This template is meant for making a detailed description of your invention off-line. The description can then later be attached in electronic form to your ID submission. You must also use this off-line description to obtain export clearance from your local export-control officer.

**Inventors name(s) + e-mail address(es):**

Javier del Prado  
[javier.delprado@philips.com](mailto:javier.delprado@philips.com)  
Sai Shankar  
[Sai.Shankar@philips.com](mailto:Sai.Shankar@philips.com)

**WARNING:** Applicable to United States of America, China and United Kingdom. In these countries export control is applicable. Please use this ID template and get clearance from your local export control officer before sending your idea via Inventions On Line to IP&S.

#### For Export Control Officer (ECO):

Before this ID can be submitted to the automated Invention On Line System of Philips Intellectual Property & Standards it is sent to you in your capacity of Export Control Officer of the entity (Research/Business Unit) the inventor(s) belong(s) to in order to obtain your legally required export clearance. Please fill out the following fields and return the completed form to the inventor/sender.

Name ECO: Betsy McIlvaine

Research/ Business Unit: Philips Research USA

Export clearance yes/no:yes

Export control clearance number: NLR EAR99

Letter of assurance required? (US):no

Any other comments:

Date of export control:23 Jan 04

In case of any questions ask IP&S Helpdesk ICT

#### Detailed description of your invention:

Please describe your invention in terms of what is already known, the measures/features of your invention and the resulting advantages. The following scheme may be useful.

- Give some background information in the field of your invention, i.e. state of the art, such as commonly known facts, devices etc. If possible, state references to public documents, such as articles in technical journals, proceedings of conferences, brochures, or patent documents.
- Indicate problems/disadvantages with the state of the art that your invention will overcome. Are the disadvantages/problems new or were they already known?
- The measures/device features that are proposed to solve the problem, and the resulting advantages. If the invention is based on a new understanding (insight), please indicate this.

Confidential. No disclosure of the contents to persons outside Philips is allowed without the written permission of Koninklijke Philips Electronics N.V. who is the owner of this information.



# PHILIPS

This template is meant for making a detailed description of your invention off-line. The description can then later be attached in electronic form to your ID submission. You must also use this off-line description to obtain export clearance from your local export-control officer.

- d. Provide at least one embodiment of the invention, where you explain the best way of carrying out the invention. Please add drawings, graphs, test data etc. where appropriate.
- e. Indicate in which fields (technical, commercial) the invention can be applied.

### Enhanced NAV mechanism for optimal reuse of the spectrum

#### Prior Art and Problem Statement

The IEEE 802.11-99 Standard defines the following NAV protection mechanism:

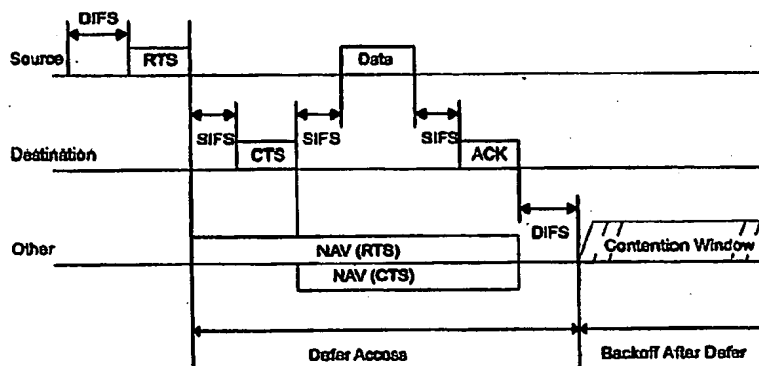


Figure 57—RTS/CTS/data/ACK and NAV setting

The medium is reserved during both transmission and reception of frames, although reservation is only needed when frames need to be received.

#### Invention

In this invention we propose a new use of the NAV mechanism that allows for an optimal reuse of the spectrum. Basically, when a station is transmitting some data, the neighbours of such station can also transmit frames, because the collisions can only occur at the receiver station. The reservation of the medium needs only to be done exactly when a frame is expected to be received, that is, neighbours of a receiver, need to be quite at that time, so that the receiver can decode a frame. This is shown in the following figure:

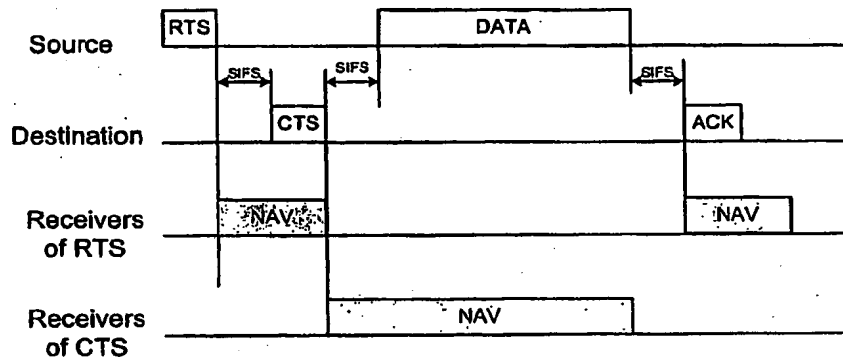
When normal ACK policy is used:



## Philips Intellectual Property & Standards

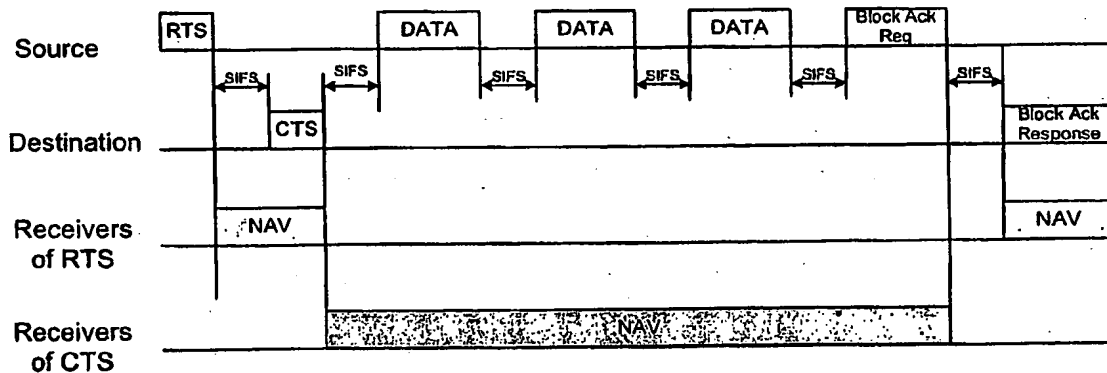
Invention Disclosure  
Version 1.4.0 14-11-2002

This template is meant for making a detailed description of your invention off-line. The description can then later be attached in electronic form to your ID submission. You must also use this off-line description to obtain export clearance from your local export-control officer.



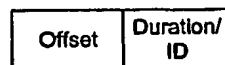
This mechanism becomes very efficient when burst ACK or No ACK policies from the IEEE 802.11e draft are used in combination with the TXOP bursting:

For example:



Receivers of RTS (which did not receive the CTS) can use the medium while the Source is sending Data, since they will not interfere with the recipient of the Data Frames (i.e., the sender of the CTS)

This is achieved by modifying the current Frame Format. We just add a new Offset Field before the Duration/ID value:



The Offset field specifies the time between the end of the reception of the frame and the time when the NAV shall be set

Confidential. No disclosure of the contents to persons outside Philips is allowed without the written permission of Koninklijke Philips Electronics N.V. who is the owner of this information.



# PHILIPS

## **Philips Intellectual Property & Standards**

### **Invention Disclosure** Version 1.4.0 14-11-2002

This template is meant for making a detailed description of your invention off-line. The description can then later be attached in electronic form to your ID submission. You must also use this off-line description to obtain export clearance from your local export-control officer.

Traditional reservation method can still be used with Offset = 0

Confidential. No disclosure of the contents to persons outside Philips is allowed without the written permission of Koninklijke Philips Electronics N.V. who is the owner of this information.



# **PHILIPS**